

CLAIMS

1. A switching device comprising:

a lower case for retaining a printed-circuit board;

5 an upper case fitting the lower case, for catching the printed-circuit board between inside walls thereof;

an operation button projecting from an opening part provided in the upper case;

10 a link mechanism having a first arm and a second arm, wherein both arms cross each other for retaining the operation button, wherein the operation button is movable vertically;

a push-button switch fixed on the printed-circuit board under the operation button;

15 an elastic body provided between the push-button switch and the operation button, wherein the elastic body biases the operation button in the direction away from the push-button switch;

an actuator connected to the first arm, wherein the actuator is movable in parallel with the printed-circuit board;

a connection terminal provided on the printed-circuit board; and

20 a wire made of a shape-memory alloy, wherein both ends thereof are fixed to the connection terminals, and wherein an intermediate part thereof is retained by the actuator.

2. A switching device as claimed in claim 1,

25 wherein the elastic body biases the operation button; and

wherein the wire made of a shape-memory alloy is tensioned by an action in which the first arm displaces the actuator so that the actuator

is separated from the connection terminal.

3. A switching device as claimed in claim 1,

wherein the connection terminal part has a taper part that extends
5 in the shape of a sector at both sides of the wire made of a
shape-memory-alloy.

4. A switching device as claimed in claim 1,

wherein the connection terminal part has an outer edge in a
10 circular shape; and

wherein the wire made of a shape-memory alloy is allowed to wrap
around the outer edge in the circular shape.

5. A switching device as claimed in claim 1, further comprising an
15 elastic member,

wherein one end of the elastic member is connected to the wire
made of the shape-memory-alloy between the connection terminal and
the actuator, allowing the wire made of the shape-memory-alloy to be
tensioned.

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6. A switching device as claimed in claim 1, further comprising a heat
radiating member,

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wherein the wire made of the shape-memory alloy has a first
position occupied when heated, and a second position occupied when
unheated; and

wherein the wire made of the shape-memory alloy contacts the heat
radiating member only at the first position.

7. A switching device as claimed in claim 6,

wherein the first position is arranged so that the actuator is pulled toward the connection terminal when the wire made of the shape-memory alloy contracts.

8. A switching device as claimed in claim 6, further comprising a peltiert device on the printed-circuit board,

wherein the peltiert device controls the temperature of the heat radiating member.

9. A switching device as claimed in claim 1,

wherein the printed-circuit board has a plurality of the switching devices thereon.

10. A switching device as claimed in claim 1,

wherein the adjacent switching device on the printed-circuit board shares the connection terminal.